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ABSTRACT

Researchers of writing ability have often applied the developmental schemes of William Perry, Lev Vygotsky, and Jean Piaget in describing basic writers. As a result, some researchers have concluded that basic writers think well below the formal-operations or true concept-formation stage of cognitive development. To investigate the theory that basic writers are cognitively deficient, two studies were performed with groups of basic writers and, for comparison, groups of graduate students. Task A required both sets of subjects to provide logical transitions between 12 related sentences. Results showed little difference between the basic writers and the graduate students' abilities. However, an error analysis showed that the basic writers made more spelling and mechanical errors. Task B asked students to revise a paragraph in terms of inductive and deductive logic, movement from general to specific items, and chronological and spatial arrangement. Results again showed no difference in ability to complete the task, but many more mechanical and spelling errors on the part of the basic writers. This suggests that basic writers are not cognitively immature, but are simply working at an unfamiliar task and are unacquainted with the conventions necessary to perform it well. More research in the area of basic writing is needed, but researchers would be wise to look for ways to help basic writers, rather than label them. (Fifteen references are included.) (JC).

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Are Basic Writers Cognitively Deficient?

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

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ABSTRACT

This paper shows how the cognitive theories of Piaget, Perry, and Vygotsky have been used and misused in basic-writing research, discusses the implications of the faulty assumptions derived from this research, and suggests more fruitful and more positive ways to approach cognition and the basic writer. The authors report their results from comparing the performances of basic writers and graduate students on a variety of tasks that require logical thinking and recognition of meaningful idea patterns.

The assumption that basic writers not only cannot write but also cannot think pervades research in developmental composition. Using the developmental schemes of Perry, Vygotsky, or Piaget to evaluate writing, researchers conclude that "basic writing students are operating well below the formal-operations or true-concept formation stage of cognitive development" (Lunsford, 1977, p. 41; see also Bradford, 1983; Bergstrom, 1983; Farrell, 1983; Sternglass, 1982) or that they are "embedded within . . . [a] dualistic frame of reference" and exhibit characteristics of Perry's Position One, Basic Duality stage (Hays, 1983, p. 131). The implications of these conclusions for the students themselves are clearly demeaning: basic writers are depicted as intellectually incompetent, their cognitive and even moral development equated with that of seven or eight-year-olds. The implications for teachers, on the other hand, are confusing, at the same time suggesting that psychological diagnosis is integral to their task and relatively simple and, in a time of diminished resources, calling into question the wisdom of attempting to educate developmental students at the college level.

Are basic writers cognitively deficient? Do writing deficiencies presuppose thinking deficiencies? Neither a review of the research nor our studies of basic writers' thinking support affirmative answers. Both theoretical and methodological problems handicap attempts to apply Perry's, Vygotsky's, and Piaget's cognitive theories to writing instruction. And our comparisons of basic writers and graduate students on two writing/thinking tasks suggest that, while both groups were operating at a formal-operations level, the groups differed significantly in their command of the conventions of writing.

Critique of Stage-Theory Application to Writing Analysis

Applications of stage-theories to writing instruction share two common characteristics: 1. the stages are used as measuring sticks, with "early" stages interpreted as "low" levels of development, and 2. student writing is employed as the

diagnostic, with evaluations of writing structures generalized to diagnose cognitive or mental structures. Some of the problems inherent in both practices were suggested by Piaget in a 1972 article, "Intellectual Evolution from Adolescence to Adulthood."

> In our investigation of formal structures we used rather specific types of experimental situations which were of a physical and logical-mathematical nature because these seemed to be understood by the school children we sampled. However, it is possible to question whether these situations are, fundamentally, very general and therefore applicable to any school or professional environment. . . . It is highly likely that [young adults] will know how to reason in a hypothetical manner in their specialty, that is to say, disassociating the variables involved, relating terms in a combinatorial manner and reasoning with propositions involving negations and reciprocities. They would, therefore, be capable of thinking formally in their particular field, whereas faced with our experimental situations, their lack of knowledge or the fact they have forgotten certain ideas that are particularly familiar to children still in school or college, would hinder them from reasoning in a formal way, and they would give the appearance of being at the concrete level (p. 10).

Indirectly, Piaget cautions against using his stages to evaluate the cognition of young adults, citing mediating factors such as lack of knowlege of lapses in recall as impediments to performance and implying a qualitative difference between children's functioning at the concrete level and adults' "appearing" to function at the concrete level. Directly, he recommends using familiar rather than unfamiliar situations in assessment and explains the use of physical and logical-mathematical problems in his own experiments on the basis of their familiarity to the school children who were his subjects.

A qualitative rather than quantitative difference between the cognitive operations of children and adults is integral to both Piaget's and Vygotsky's developmental theories. Both tie cognitive development to physical development and attempt to explain limitations on thought in terms of the maturation process. Children and adults may use the same word to refer to a concrete object, behave in an egocentric manner, or make a dualistic, either-or judgment, but the meanings and thought processes behind these behaviors are different. According to Vygotsky, meaning "meets" in adults' and children's use of words; however, the possibility for mutual understanding should not be misconstrued as evidence of similar thought processes (1934;1962, p. 68). Both children and adults may say the sun "goes down"; but very young children, limited by an egocentric

perspective will actually believe the sun has moved below the horizon and may even attribute motives to the action, such as the sun is hiding or running away. Adults' attempts to explain to children the motion of the earth, the differences between appearance and reality and between animate an inanimate objects will be frustrated by the children's inability to move beyond the physical evidence and think abstractly: "But we're not moving. It is. Look, it's going down" (Cowan, 1978, p. 11). Similarly, both children and adults may reduce a complex moral issue to a simple judgment of "right or wrong." However, the children's judgment may be based on an information-processing capacity that restricts them to binary operations, whereas the adults' judgment may be the result of cultural conditioning, lazy thinking, or emotional rather than logical responses (Halford, 1980; Cowan, 1978; Collis, 1980).

Clearly, removing the concomitant process of physical maturation from these stage-theories and using them to measure the cognition of adult-learners violate an essential premise of the theories. Moreover, in the 1972 article cited earlier, Piaget suggests that researchers whose findings place adults at a concrete operations level should question their diagnostic instruments and change the experimental situation to one the subjects know well--that is, to an area of mastery. Using essay-writing--an unfamiliar situation--to measure the cognitive level of basic writers, who by definition are novices in writing, nearly guarantees a deficient response. And using an essay--a learning outcome--to assess cognitive level--a psychological construct--confounds attainment with ability to attain, presupposing a direct correspondence between thought and word that Vygotsky calls "impossible" (1934; 1962, pp. 150-152).

As researchers have shown, the quality of a learning outcome depends only partially on the ability of the learner. Non-cognitive factors such as familiarity with the task, motivation, and even "emotionality at time of learning and of performance" may result in lower levels of performance. Cognitive factors other than level of cognitive development may also influence outcomes, including "working memory span; knowledge of conceptual prerequisites; study processes, especially leading to

elaboration, [and] channel efficiency (e. g. verbal fluency, reading ability)" (Biggs, 1980, p. 112). The extent to which channel inefficiency impedes the production of sophisticated essays is implicit in Annette Bradford's explanation of her basic writers' difficulties:

> . . . [M]any times when I have talked with students who were having writing problems, I have found them quite able to explain verbally what they intended to express in the written assignment. But when these students were forced to take this synthesis one step further, to the level of written communication, they failed. The problem is not simply a matter of concept formation: it is complicated by the college requirement that students present ideas in written form (1983, p. 15).

Although Bradford concludes that her students are cognitively immature, her explanation suggests something else. If her students can explain their ideas in speech but not in writing, the problem lies, not with the ideas themselves, but with the channel of their expression. In other words, channel inefficiency prevents a higher-level response.

Basic writers' channel inefficiency and lack of prerequisite knowledge also make evaluating their writing in terms of Perry's cognitive stages suspect. Unlike Piaget and Vygotsky, Perry does not link cognitive maturation to physical maturation, but he does link his stages to progress through a liberal-arts education at Harvard. Moreover, rather than attempting to describe the natural development of mental structures or concept-formation in all 18-to-21-year-olds, he describes the progress of a specific group of 18-to-21-year-olds toward a specific world-view, under the influence of a specific curriculum. The theory is, then, "culture-bound" or task specific. As Patricia Bizzell points out in her article "William Perry and Liberal Education," it involves learning to think in a certain way rather than "learning to think," as cognitive psychologists or genetic epistemologists such as Piaget define "thinking" (1984). In applying Perry's scheme outside the situation it describes, researchers may in effect be using apple standards to evaluate oranges. Certainly, they are adding extra dimensions of prerequisite knowledge that students must master in order to produce a high-level response. (See Janet Hays, 1983, and Myra Kogen, 1986, for a

Perry-type analysis of student writing and a response to that analysis.)

Two Studies of Writers' Thinking

To investigate allegations that basic writers are cognitively immature, unable to think abstractly or to perform cognitive operations expected of adults, the authors of this study administered two writing/thinking tasks to groups of randomly selected basic-writing and graduate-level students. The graduate students were included for comparison; moreover, it was assumed that possession of a degree and admission to a graduate program increased the likelihood that the students were functioning at a formal level of operations. All of the basic writers selected had scored 16 or below on the English portion of the ACT and had been assessed as developmental level on the basis of a written essay and a revision-style grammar test.

Both tasks called for the subjects to revise groups of sentences arranged in paragraph fashion. Students were asked to revise for logic, but no clues were provided as to the specific types of logical connections or patterns the researchers were looking for. Care was taken to include all of the factual information needed to make a successful revision so that performance would not be impeded by lack of some specific content-area knowledge (for example, the composition of the balls used in Galileo's experiment). In each case successful revision required simultaneous analysis and synthesis--a characteristic, according to Vygotsky, of higher-order thought (1934;1962). They also required students "to reason in a hypothetical manner . . . disassociating the variables involved, relating terms in a combinatorial manner and reasoning with propositions involving negations and reciprocities"--elements of formal thought as Piaget described them in 1972.

TASK A

The first task consisted of twelve simple sentences.

Directions: The following sentences lack logical connections and structure. Rewrite as one or two sentences, arranging the ideas and using sentence structure to show the relationship among ideas.

Many people study world affairs. They remember our last three wars. They realize the dangers. Another conflict will be dangerous. They realize these

> dangers sadly. They realize these dangers inevitably. Another conflict will endanger the economic strength. This is our nation's strength. Another conflict will endanger the stability. This is our political institutions' stability. Another conflict will endanger the complacency. This is our social structures' complacency.

A blind grader identified logical connections implicit in the sentences, including equal ideas that called for coordination or parallel structure and unequal ideas that called for subordination. Two points were assigned for each connection made. Unequal n's of 20 graduate students and 22 basic writers were compared, using a Mann-Whitney U analysis. A null hypothesis of no difference between the groups was accepted with a Z test score of .39.

However, an error analysis of the subjects' revisions yielded different results. The grader tabulated errors in spelling, punctuation, sentence structure, sentence-boundary punctuation, vocabulary, and capitalization, and the scores were compared using the same analysis. In this case the null hypothesis was rejected at the .001 level, showing a strong, statistically significant difference between the number of errors made by basic writers and the number made by the graduate students.

TASK B

The second task was longer and called for more intensive application of formal-thought processes. Ideas in the passage for revision had been disordered in terms of inductive or deductive progression, including movement from the general to the specific or the specific to the general, and in terms of chronological and spatial arrangement. Since disparate elements were included within the same sentences, successful revision required more than a simple rearrangement of sentences.

> Directions: The following paragraph violates many principles of logical order. Revise to show logical relationships and patterns of ideas.
>
> The Leaning Tower of Pisa is inseparably connected to the history of physics. It is also one of the architectural wonders of the world. Two spheres that Galileo threw from the upper platform of the tower hit the ground at almost the same moment and dropped side by side, thus disproving, once and for all, the belief of his contemporaries that heavier bodies must fall faster than light ones. One of the spheres made of cast iron was heavy, and one made of wood was lighter--a large difference in weight. Galileo simultaneously released the two spheres. By this simple experiment, Galileo established the important

> fact that, independent of their weight, all material bodies fall with exactly the same speed. The tower was the site of Galileo's famous experiment with falling bodies. (Adapted from George Gamow, Matter, Earth, and Sky)

Again, a blind grader scored the revisions, assigning two points for each logical connection made. As with Task A, unequal n's of 20 graduate and 22 basic writers were compared,using the Mann-Whitney U test, and once again the null hypothesis of no difference was accepted with a Z score of -.98.

The error analysis of Task B revisions yielded results almost identical to those of Task A. The null hypothesis was rejected at the .001 level; the basic writers made a significantly greater number of errors than the graduate students.

DISCUSSION

The results of both tasks suggest no significant difference between the groups' applications of analysis and synthesis in their revisions but significant differences in their applications of some of the basic mechanical and grammatical conventions of writing standard English. The basic writers showed that they, like the graduate students, could distinguish disparate arrangements of ideas and could disassemble and reassemble faulty idea structures in terms of complex, interlocking patterns. But the basic writers also showed that they, unlike the graduate students, had not mastered some of the basic skills of writing standard English and, consequently, often obscured meaning with a dense mask of major and minor errors.

These findings coincide with and complement those of Myra Kogen who found lack of familiarity with the conventions of expository writing rather than inept thinking in her analysis of basic writers' essays (1986). "It is all too easy," she writes, "to conclude that those who do not do, or who do not wish to do, what we seem able to do are deficient and underdeveloped. But, more important, such assumptions about reasoning and its role in discourse are not borne out by experience" (p. 25). Mike Rose in a 1983 article, "Remedial Writing Courses: A Critique and a Proposal," concurs:

> Our students are not cognitively "deficient" in the clinical sense of the term; if they were, they wouldn't be able to make the progress they do. Our students are not deficient; they are raw. Our job, then, is to create carefully thought-out, appropriate, undemeaning pedagogies that introduce them to the conventions of academic inquiry (p. 127).

RECOMMENDATIONS

Creating "carefully thought-out, appropriate, undemeaning pedagogies" suggests a meaningful direction for research in composition and cognition. Two specific areas for study are the development of viable, standard methods for analyzing and evaluating essays as learning outcomes and a systematic review of pedagogical strategies to determine which result in improved learning outcomes. In addition, borrowing from Linda Flower and John Hayes' studies in metacognition, developmental researchers might use protocols to discover more about basic-writing processes specifically and to help students develop the reflexive habits necessary to thoughtful composition. And borrowing from Piaget (although we have rejected his stages as a cognitive paradigm for evaluating student essays), we might effectively implement his ideas about learning by increments and using peer-interaction in the learning process to enhance student control of learning in a student-centered classroom.

Certainly, the study of cognitive strategies underlying the composition processes has much to offer the writing teacher, but we must avoid the temptations to play psychologist, to diagnose and measure and provide therapy for deficiencies that are apparent rather than real. To state the obvious, our students are basic writers because they have problems writing. If we focus, then, on finding solutions to their writing problems rather than attempting to rework their mental structures or even revise their world views, our chances for success should improve--much as using an eggbeater rather than a rolling pin to beat eggs improves the result.

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